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INTRODUCTION.

This REVIEW treats generally the meteorological conditions of the United States and Canada for February, 1889, and is based upon reports of regular and voluntary observers of both countries.

On chart i the paths of the centres of nine areas of low pressure are shown; the average number traced for February during the last fourteen years being 10.7. This chart also exhibits the approximate paths of the centres of seven depressions traced over the north Atlantic Ocean; the limits of fog-belts west of the fortieth meridian, and the distribution of field ice during the month. The areas of high and low pressure and north Atlantic storms are discussed under their respective headings.

Chart ii exhibits the distribution of mean atmospheric pressure and temperature for the month. The mean temperature was above the normal from the upper Missouri valley westward to the Pacific coast, and thence southward over California; it was also slightly above the normal in eastern Nova Scotia. The greatest excesses occurred in, and north of, Dakota, northern Montana, and in northwestern Washington, where the means were 5°, or more, above the normal. In all other districts the month was cooler than the average February, the most notable deficiencies occurring east of the Mississippi River, and from the southern part of the Lake region to the Gulf of Mexico, where they exceeded 5°.

The distribution of precipitation for February, 1889, is shown on chart iii, and the normal precipitation for eighteen years is exhibited on chart iv.

The precipitation was deficient in the plateau and Pacific coast regions, and in all districts east of the Mississippi River, except in the upper lake region and the south Atlantic states, where there was a slight excess. On the eastern Rocky Mountain slope, in the extreme northwest, and the Missouri and Rio Grande valleys the precipitation was in excess of the average for the month. The current and normal precipitation in the several districts is treated in detail under the heading "Precipitation." In the table of excessive precipitation a record of excessive monthly, daily, and hourly rainfalls for February, 1889, will be found. In this issue of the REVIEW there also appears a summary, by stations, of excessive monthly, daily, and hourly rainfalls at regular stations of the Signal Service during the periods of observation.

Chart v exhibits the depth of snow on the ground at the close of the month, and its discussion appears under the heading of "Precipitation." This chart also shows the limits of freezing weather during February, 1889.

Commencing with July, 1888, the meteorological means for the regular stations of the Signal Service have been determined from observations taken twice daily at 8 a. m. and 8 p. m. (75th meridian time). These hours of observation have been permanently adopted to supersede the former system of tri-daily observations taken at eight-hour intervals. The monthly mean temperature for Signal Service stations represents the mean of the maximum and minimum temperatures.

In the preparation of this REVIEW the following data, received up to March 20, 1889, have been used: the regular semi-daily weather-charts, containing data of simultaneous observations taken at 133 Signal Service stations and 24 Canadian stations, as telegraphed to this office; 171 monthly journals and 175 monthly means from the former and 24 monthly means from the latter; 557 monthly registers from voluntary observers; 109 monthly registers from United States Army post surgeons; marine records; international simultaneous observations; marine reports through the co-operation of the Hydrographic Office, United States Navy, and the "New York Herald Weather Service;" monthly weather reports from the local weather services of Alabama, Arkansas, Colorado, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Mississippi, Missouri, Nebraska, Nevada, New England, New Jersey, New York, North Carolina, Ohio, Oregon, Pennsylvania, South Carolina, Tennessee, and Texas, and the Central Pacific Railway Company; trustworthy newspaper extracts, and special reports.

ATMOSPHERIC PRESSURE (expressed in inches and hundredths).

The distribution of mean atmospheric pressure for February, 1889, as determined from observations taken daily at 8 a. m. and 8 p. m. (75th meridian time), is shown on chart ii by isobars. On July 1, 1888, the tri-daily observations of the Signal Service were superseded by observations taken twice daily at the hours named. A protracted series of hourly observations has shown that the difference is almost inappreciable between the mean pressure obtained from two observations taken at these hours and that determined from tri-daily observations taken at eight-hour intervals.

The mean pressure for February, 1889, was highest at stations in the middle and northern plateau regions of the Rocky Mountains, where it rose above 30.25. Within an area extending from the south Atlantic and east Gulf states northwestward to the upper valley of the Columbia River the mean values were above 30.20. The mean pressure was lowest over the northern portion of New Brunswick, where it fell to 29.99 at Father Point. Over the western portion of the country the mean readings were above 30.10, except in southern California and portions of southern Arizona and New Mexico.

As compared with the pressure chart for January, 1889, a general increase in pressure is shown, except over the middle Rocky Mountain regions and in south-central New Mexico, where there has been a slight decrease. The most marked increase has occurred from the Mississippi and lower Missouri valleys eastward to New England and the Atlantic coast states, where the mean readings in February were from .10 to .14 higher than in the preceding month. Along the Pacific coast